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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,350	09/02/2003	Eun Jung Lee	A35967 073226.0119	3503

38485 7590 11/15/2006

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EXAMINER	
SEHARASEYON, JEGATHEESAN	
ART UNIT	PAPER NUMBER
1647	

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/653,350	LEE ET AL.	
	Examiner	Art Unit	
	Jegatheesan Seharaseyon, Ph.D	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) *3-5 and 10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6,7 and 9* is/are rejected.

7)☒ Claim(s) *8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/25/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's election with traverse of Group I, claims 1-2 and 6-9, drawn to an isolated polypeptide in response filed 8/30/2006 is acknowledged. Applicant argues that a search of all of the claims would not be a burden, since the same search terms-e.g., "interferon" and "glycosylation' would be required for both the protein and its encoding DNA. Also, Applicant asserts that there is a well-known relationship between a polypeptide and its encoding DNA, rendering these molecules part of the same patentable invention. Applicants' arguments have been fully considered but are not considered to be persuasive because search for polypeptide will not automatically result identifying the polynucleotide. Similarly a search directed to polynucleotide will not automatically lead to the identification of the protein. Therefore, the searches for each of the groups are not coextensive and would be a burden on the Office to search all of the different claims of the groups. The requirement is still deemed proper and is therefore made FINAL. Claims 3-5 and 10 will be withdrawn from further consideration. Thus, claims 1-2 and 6-9 are pending and examined.

Priority

2. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(a-d) is acknowledged. Applicant is accorded the priority date of 8/31/2002.

Information Disclosure Statement

3. The IDS filed on 8/25/2004 has been considered.

Drawings

4. The drawings filed 9/2/2003 are acknowledged. Figure 8 is objected to because the western blot is not clear and provides no useful information.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5a. Claims 1-2 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for human interferon alpha isoform of SEQ ID NO: 1, the specification does not reasonably provide enablement for all human interferon alpha isoforms. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue. See *In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404 The factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue" include, but are not limited to: (1) the breadth of the claims; (2) the nature of the invention; (3) the state of the prior art; (4) the level of one of ordinary skill; (5) the level

of predictability in the art; (6) the amount of direction provided by the inventor; (7) the existence of working examples; and (8) the quantity of experimentation needed to make or use the invention based on the content of the disclosure.

Claims 1-2 are drawn to human interferon alpha isoform comprising at least one N-glycosylation motif with sequence Asn-Xaa-Ser/Thr. However, Applicant's have only disclosed human interferon alpha of SEQ ID NO: 1 (pages 5, 7 and 8). The specification as filed is insufficient to enable one skilled in the art to practice the claimed invention without an undue amount of experimentation because not all human interferon alpha isoforms have been disclosed. The specification asserts that in human at least 20 kinds of interferon-alpha genes and pseudo-genes have been identified (see page 2). It also asserts that "isoform of human interferon alpha" refers to an analogue or mutant having one or more of amino acid sequence residues of wild-type human interferon alpha modified with another amino acid while maintaining its inherent activities. Applicant has not identified a common structure responsible for the "inherent activities". Since, not all human interferon alpha isoforms are disclosed and a common structure has not been identified, it is unclear how one skilled in the art can extrapolate the observations of the instant invention to obtain all human interferon alpha isoforms contemplated in the instant invention. The specification does not teach how to make amino acid sequences that is an analogue or mutant having one or more of amino acid sequence residues of wild-type human interferon alpha modified with another amino acid while maintaining its inherent activities.

Although, the biological functions of the interferon alpha polypeptides are well known it is not clear how the functions will be affected by changing one or more amino acid residues of the wild-type human interferon alpha. Since, one skilled in the art could not determine with reasonable expectation of success what biological functions of interferon alpha would remain in the analogue or mutant, the skilled artisan would not be able to make human interferon alpha mutants, and test them for biological activity. Furthermore, the specification provides no guidance as to how the skilled artisan could use human interferon alpha analogue or mutant, as no functional limitations associated with human interferon alpha analogue or mutant are recited in the claims.

Despite knowledge in the art for producing variants of a given polypeptide with amino acid deletions, insertions or substitutions the specification fails to provide any guidance regarding the changes/modifications contemplated and yet retain the function of the interferon alpha isoforms claimed. Furthermore, detailed information regarding the structural and functional requirements of the disclosed protein is lacking. Although it is accepted that the amino acid sequence of a polypeptide determines its structural and functional properties, predicting a protein's structure and function from mere sequence data remains an elusive task. The problem of predicting protein structure from sequence data and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein is extremely complex. While it is known that many amino acid substitutions are generally possible in any given protein, the positions within the protein's sequence where such amino acid substitutions can be made with a reasonable expectation of success are limited. Certain positions in the sequence are critical to the

protein's structure/function relationship, e.g. such as various sites or regions directly involved in binding, activity and in providing the correct three-dimensional spatial orientation of binding and active sites. These or other regions may also be critical determinants of antigenicity. These regions can tolerate only relatively conservative substitutions or no substitutions (Wells 1990, Ngo et al., 1994). However, Applicant has provided little or no guidance beyond the mere presentation of sequence data to enable one of ordinary skill in the art to determine, without undue experimentation, the positions in the protein which are tolerant to change (e.g. such as by amino acid substitutions or deletions), and the nature and extent of changes that can be made in these positions. Therefore, undue experimentation would be required of the skilled artisan to make and/or use the claimed invention in its full scope, because the skilled artisan would have no reasonable expectation of being able to make and use interferon alpha isoform polypeptides with various identities for any purpose stated in the specification.

5b. Claims 1-2 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

To provide evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or

chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof.

The claims are drawn to interferon alpha isoform comprising at least one N-glycosylation motif with sequence Asn-Xaa-Ser/Thr. However, Applicant's have only disclosed human interferon alpha of SEQ ID NO: 1 (pages 5, 7 and 8). There is no functional characteristic associated with any specific motifs within the interferon alpha polypeptide has been identified. The specification as filed does not disclose all human interferon alpha isoforms. The specification asserts that in human at least 20 kinds of interferon-alpha genes and pseudo-genes have been identified (see page 2). It also asserts that "isoform of human interferon alpha" refers to an analogue or mutant having one or more of amino acid sequence residues of wild-type human interferon alpha modified with another amino acid while maintaining its inherent activities. The claims do not require that the claimed polypeptide possess any particular biological activity, nor any particular conserved structure, or other disclosed distinguishing feature.

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of polypeptides, and therefore conception is not achieved until

reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1616.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the human sequence.

In this case, the only factor present in the claim is a partial structural requirement in the form of a sequence motif needed for N-glycosylation (NXS/T). There is not even identification of any particular portion of the structure that must be conserved. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Therefore, only isolated polypeptides comprising the amino acid sequence set forth in SEQ ID NO: 1, but not the full breadth of the claims meet the written description provision of 35 U.S.C. 112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. 112 is severable from its enablement provision (see page 1115).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6a. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nyman et al. (1998) in view of Margolin et al. (U. S. Patent No. 6, 359, 118).

Claims are drawn to human interferon alpha isoform comprising at least one N-glycosylation.

Nyman et al. discloses a recombinant interferon alpha isoform (IFN-α14c) that contains at least a potential N-glycosylation (abstract, page 299). The glycosylation was

shown to occur at Asn-72 (abstract). This occurs in the non-helical region of the interferon alpha protein. The reference also teaches that Asn-72 is attached to a carbohydrate moiety with a molecular mass of approximately 1800 Daltons (page 301). Nyman et al. does not disclose asparagine-72 (Asn-72) being N-linked to acetylglucosamine.

Margolin et al. (U. S. Patent No. 6, 359, 118) teaches that the carbohydrate monomers typically attached to glycoproteins include galactose, mannose, glucose, N-acetylglucosamine, N-acetylgalactosamine, fucose, xylose, sialic acid and others (column 1, lines 45-48). The carbohydrate units are usually attached through the hydroxyl groups of serine and threonine side chains, or the amide nitrogen atom of asparagine side chains (column 1, lines 48-50). The reference also teaches that the addition of carbohydrate molecules make the protein stable while maintaining the structural and functional integrity of the glycoprotein backbone (column 1, line 10-20). The reference also teaches pharmaceutical compositions of the protein comprising the carbohydrate (column 14, lines 25-40).

It would have been *prima facie* obvious to the person of ordinary skill in the art at the time the invention was made to modify the recombinant interferon alpha isoform comprising at least one N-glycosylated moiety as disclosed by Nyman et al. with the teachings of Margolin et al. to add N-acetylglucosamine motif at the asparagine residue. One of ordinary skill in the art would have been motivated to N-glycosylate recombinant interferon alpha isoform with N-acetylglucosamine because Nyman et al. teaches that recombinant interferon alpha isoform (IFN-α14c) is N-glycosylated at Asn-72 and

Margolin et al. teaches that carbohydrates are added thru the amide of asparagine side chains (column 1, lines 48-50) to increase the stability of the protein. Further, there is reasonable expectation of success because Nyman et al. discloses that there is N-glycosylation of recombinant interferon alpha isoform. In addition, Margolin et al. also disclose pharmaceutical composition. Therefore, the instant invention is *prima facie* obvious over Nyman et al. (1998) in view of Margolin et al. (U. S. Patent No. 6, 359, 118).

6b.Claims 6, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goeddel et al. (U. S. Patent No. 6, 482, 613) in view of Sekellick et al. (U. S. Patent No. 6, 020, 465) and Apweiler et al. (1999).

The instant invention is drawn to IFN-α isoform with at least one introduced N-glycosylation.

Goeddel et al. (U. S. Patent No. 6, 482, 613) discloses recombinant human IFN-α isoform of SEQ ID NO: 1 in *E.coli* (see Appendix A). The reference also teaches that human leukocyte interferon is a glycosylated protein (column 3, lines 19-24). The reference also discloses the putative signal sequence that is 23 amino acids long (column 11, lines 50-53). Goeddel et al. reference discloses the expression of a "mature leukocyte interferon" connotes the bacterial or other microbial production of an interferon molecule unaccompanied by associated glycosylation (column 4, lines 23-26). The mature polypeptide starts at amino acid Cys. However, the reference does not specifically recite the N-glycosylation motif of NXS/T.

Apweiler et al. (1999) disclose the N-glycosylation consensus sequence NXS/T (where X can be any amino acid but proline) required for N-glycosylation of protein (abstract).

Sekellick et al. (U. S. Patent No. 6, 020, 465) discloses the use of mammalian cell culture (e.g. CHO cells) to produce recombinant proteins. The reference teaches that CHO cells are most preferred in order to achieve glycosylation (column 2, lines 5-10). The reference also teaches N-glycosylation protein increases stability (column 4, lines 17-25).

It would have been *prima facie* obvious to the person of ordinary skill in the art at the time the invention was made to modify the recombinant interferon alpha isoform of SEQ ID NO: 1 disclosed by Goeddel et al. with the teachings of Apweiler et al. and Sekellick et al. to add a N-glycosylation motif and produce a glycosylated interferon. One of ordinary skill in the art would have been motivated to N-glycosylate recombinant interferon alpha isoform by modifying SEQ ID NO: 1 with NXS/T motif because Apweiler et al. teaches that NXS/T motif are required for N-glycosylation and provide for increased the stability of the protein as disclosed in Sekellick et al. In addition, Sekellick et al. teaches that producing polypeptides in mammalian cells such as CHO cells allows for the recombinant interferon alpha isoform to be N-glycosylated. Further, there is reasonable expectation of success because Goeddel et al. discloses that human leukocyte interferon is a glycosylated protein. In addition, modifying amino acids Pro4, Gln5, Thr6 or Thr6, His7, Ser8 or Leu26, Phe27, Ser28 or Ala50, Glu51, Thr52 or Lys134, Tyr135, Ser136 etc. for example, to introduce N-glycosylation motifs for

glycosylation of the interferon alpha isoform is obvious over the prior art because motivation is provided by the fact that these sequence motifs have Ser or Thr residue at the 3rd position as described by Apweiler et al. However, modifying His34, Asp35, Phe36 motif for example, to introduce the N-glycosylation appears to be unobvious because there is no motivation to select these amino acid positions for the modification in the absence of Ser or Thr residue at the 3rd position of the motif for N-glycosylation. Therefore, the instant invention is *prima facie* obvious Goeddel et al. (U. S. Patent No. 6, 482, 613) in view of Sekellick et al. (U. S. Patent No. 6, 020, 465) and Apweiler et al. (1999).

Conclusion

7. Claim 8 is objected and will be allowable if written independent of the rejected claim 7. Claims 1, 2, 6, 7 and 9 remain rejected.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jegatheesan Seharaseyon, Ph.D whose telephone number is 571-272-0892. The examiner can normally be reached on M-F: 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback can be reached on 571-272-0961. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregatheesan Sehoraseyan.

JS
Art Unit 1647,
November 8, 2006.

Patent Examiner

GenCore version 5.1.9

OM protein - protein search, using sw model

Run on: October 14, 2006, 08:02:07 ; Search time 53 Seconds
(without alignments)
310.486 Million cell updates/sec

Title: US-10-653-350-1
Perfect score: 960
Sequence: 1 MALTFALLVALLVLSCKSSC.....EIMRSFSLSTNLQESLRSKE 188

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 650591 seqs, 87530628 residues

Total number of hits satisfying chosen parameters: 650591

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	960	100.0	188	2	US-07-145-002B-26	Sequence 26, Appl
2	960	100.0	188	2	US-07-145-002B-35	Sequence 35, Appl
3	960	100.0	188	2	US-06-256-204C-26	Sequence 26, Appl
4	960	100.0	188	2	US-06-256-204C-35	Sequence 35, Appl
5	960	100.0	188	2	US-09-949-016-5966	Sequence 5966, Ap
6	960	100.0	188	2	US-09-915-873A-4	Sequence 4, Appli
7	960	100.0	205	2	US-09-949-016-8552	Sequence 8552, Ap
8	957	99.7	188	2	US-09-206-903A-7	Sequence 7, Appli
9	957	99.7	188	2	US-09-202-122-7	Sequence 7, Appli
10	957	99.7	188	2	US-09-206-935-9	Sequence 9, Appli
11	957	99.7	188	2	US-07-145-002B-2	Sequence 2, Appli
12	957	99.7	188	2	US-07-145-002B-17	Sequence 17, Appl
13	957	99.7	188	2	US-09-919-622A-7	Sequence 7, Appli
14	957	99.7	188	2	US-06-256-204C-2	Sequence 2, Appli
15	957	99.7	188	2	US-06-256-204C-17	Sequence 17, Appl
16	957	99.7	188	2	US-09-962-625-1	Sequence 1, Appli
17	957	99.7	188	2	US-09-599-413-3	Sequence 3, Appli
18	943	98.2	188	2	US-09-206-936-9	Sequence 9, Appli
19	937.5	97.7	189	1	US-08-026-758-4	Sequence 4, Appli
20	937	97.6	219	7	5310729-4	Patent No. 5310729
21	934.5	97.3	189	1	US-08-026-758-5	Sequence 5, Appli
22	929.5	96.8	189	7	5510472-7	Patent No. 5510472
23	895	93.2	195	7	5198345-17	Patent No. 5198345
24	851.5	88.7	188	1	US-08-249-671A-11	Sequence 11, Appl
25	851	88.6	165	1	US-08-024-330-1	Sequence 1, Appli
26	851	88.6	165	1	US-07-952-840-1	Sequence 1, Appli
27	851	88.6	165	1	US-08-356-021-1	Sequence 1, Appli
28	851	88.6	165	2	US-09-462-941-3	Sequence 3, Appli
29	851	88.6	165	2	US-06-256-204C-79	Sequence 79, Appl
30	851	88.6	165	2	US-09-915-873A-5	Sequence 5, Appli
31	851	88.6	165	5	PCT-US94-01729-1	Sequence 1, Appli
32	851	88.6	166	2	US-07-145-002B-53	Sequence 53, Appl
33	851	88.6	166	2	US-06-256-204C-53	Sequence 53, Appl
34	851	88.6	198	2	US-09-333-348B-11	Sequence 11, Appl
35	848	88.3	165	2	US-06-256-204C-71	Sequence 71, Appl
36	848	88.3	166	2	US-07-145-002B-45	Sequence 45, Appl
37	848	88.3	166	2	US-06-256-204C-45	Sequence 45, Appl
38	848	88.3	181	2	US-09-723-942-18	Sequence 18, Appl
39	848	88.3	181	2	US-09-723-775-18	Sequence 18, Appl
40	845	88.0	165	2	US-09-216-500-1	Sequence 1, Appli
41	845	88.0	165	2	US-09-730-464-1	Sequence 1, Appli
42	843	87.8	165	1	US-08-249-671A-5	Sequence 5, Appli
43	840.5	87.6	166	2	US-08-819-238A-1	Sequence 1, Appli
44	840.5	87.6	166	2	US-09-379-434-1	Sequence 1, Appli
45	835	87.0	165	7	5210029-3	Patent No. 5210029

ALIGNMENTS

RESULT 1
US-07-145-002B-26
; Sequence 26, Application US/07145002B
; Patent No. 6482613
; GENERAL INFORMATION:
; APPLICANT: Goeddel, David V.
; APPLICANT: Pestka, Sidney
; TITLE OF INVENTION: MICROBIAL PRODUCTION OF MATURE HUMAN
; TITLE OF INVENTION: LEUKOCYTE INTERFERONS
; FILE REFERENCE: 1803-0088-999
; CURRENT APPLICATION NUMBER: US/07/145,002B
; CURRENT FILING DATE: 1989-01-19
; NUMBER OF SEQ ID NOS: 70
; SOFTWARE: FastSEQ for Windows Version 3.0
; SEQ ID NO 26
; LENGTH: 188
; TYPE: PRT
; ORGANISM: Homo sapiens
US-07-145-002B-26

Query Match 100.0%; Score 960; DB 2; Length 188;
Best Local Similarity 100.0%; Pred. No. 1.5e-103;
Matches 188; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy          1 MALTFALLVALLVLSCKSSCSVGCDLPQTHSLGSRRTLMLLAQMRRISLFSCLKDRHDFG 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MALTFALLVALLVLSCKSSCSVGCDLPQTHSLGSRRTLMLLAQMRRISLFSCLKDRHDFG 60

Qy         61 FPQEEFGNQFQKAETIPVLHEMIQQIFNLFSTKDSSAAWDETLLDKFYTELYQQLNDLEA 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 FPQEEFGNQFQKAETIPVLHEMIQQIFNLFSTKDSSAAWDETLLDKFYTELYQQLNDLEA 120

Qy        121 CVIQGVGVTETPLMKEDSILAVRKYFQRITLYLKEKKYSPCAWEVVRAEIMRSFSLSTNL 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 CVIQGVGVTETPLMKEDSILAVRKYFQRITLYLKEKKYSPCAWEVVRAEIMRSFSLSTNL 180

Qy        181 QESLRSKE 188
              ||||||||
Db        181 QESLRSKE 188
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RESULT 2
US-07-145-002B-35
; Sequence 35, Application US/07145002B
; Patent No. 6482613
; GENERAL INFORMATION:
; APPLICANT: Goeddel, David V.
; APPLICANT: Pestka, Sidney
; TITLE OF INVENTION: MICROBIAL PRODUCTION OF MATURE HUMAN